

THE PRESENT POSITION OF TESTICLE TRANSPLANTATION IN SURGICAL PRACTICE: A PRELIMINARY REPORT OF A NEW METHOD

MAX THOREK, M.D.

Surgeon-in-Chief, American Hospital

CHICAGO, ILLINOIS

Much notoriety has recently been given in the lay press to the operation of testicular transplantation. This raises the question of the scientific aspect of the operation in general, hence it is desirable that the medical profession at large should have clear ideas as to its present status and what may be expected from it.

There are but very few cases of human testicular transplantation on record which have been followed by any durable degree of success. In fewer cases still has any scientific histological proof of the "taking" and vascularization of such a graft been given to substantiate claims that the graft was not resorbed. The value of such surgery must lie in the fact that a graft of this kind is able to live and function, and any method of transplantation must in the end be judged by this criterion. In the only case of human transplant reported by Lespinasse in 1913 (3) no such histologic proof was given, although it is stated that, clinically, sexual potency continued after the operation. A thorough search of the literature fails to disclose any other work done on human transplantation by Lespinasse.

Having for some years past been engaged in extensive experimental and clinical work connected with this question, I desire to bring its actual clinical status to notice, and to make a preliminary report on some of the results obtained.

A study of the extensive literature of this question since the first personal experiments of Brown-Séquard (1) shows that the testicle has a double secretion; that of the sperm cells proper, or seminiferous tubuli; and that of the interstitial glandular substance. The secretion of the seminiferous tubuli is concerned alone with fecundation; the interstitial glandular secretion has been clearly proved by a multitude of investigators to

be a hormone acting on the general system. This is a male sexual hormone, acting as a sex stimulant, and responsible for the development and maintenance of sex characters and desire.

The physiological findings naturally led to the investigation of methods having for their object the induction of the increment in individuals in which it was deficient. The best known of these methods is that of testicular grafting.



Fig. 1. Photomicrograph. Transplant of testis of higher ape into man. Author's technique. Magnification 60 diameters. Observe regression of tubuli seminiferi, proliferation of interstitium and vascularization. Removed four months after transplantation.

By numerous animal experiments it was established that either homo- or hetero-plastic grafting of testicles is possible in animals; that sometimes these grafts "took" and at other times they did not, the difference in results suggesting either a faulty technique or that some racial or specific incongruity rendered the "taking" of a heteroplastic graft impossible. The technical difficulties might be ascribed to difficulty of obtaining vasculariza-

tion in the transplanted tissue due to implantation in an unsuitable region or to an unsuitable method or to both.

The homo- and hetero-graft experiments in animals, supplemented by histological findings, reported in 1919 by Professor Serge Voronoff (2) of Paris (with whom it has been my privilege to collaborate for some years) undoubtedly gave the most brilliant results and proved that transplantation of animal testicular tissue from young to old animals of the same species was followed by viability and could be followed by clinically demonstrable renewal of physical and sexual vigor and sexual impulse which had become lost.

Although various clinical attempts have been made to transplant testicles from man to man the operation can be said to have been only partially successful. In many cases the graft was expelled after a short time and in others it became absorbed after a greater or less interval. It has been generally believed that in the cases where a graft has been retained that it exerted a hormonal influence and that physical well-being and sexual potency was for a while restored. In but few cases, however, was the actual "taking" of the graft verified by histological findings.

From the study of the literature and especially after visiting the clinics of Voronoff in Europe, I was convinced that the operation of testicular transplantation could be made a practical surgical procedure.

The difficulty of vascularization could, I believe, be met by a suitable site and method of implanting the graft. The great difficulty, however, of obtaining perfectly suitable material was not one easily solved, as for obvious reasons human testicular material is difficult to obtain, and is not always likely to be free from disease and suitable for transplanting.

By a series of experimental investigations I devised a method of transplantation which I call the "lantern" technique which has given perfectly satisfactory results as regards the "taking" and rapid vascularization of testicular grafts. I have also succeeded in successfully transplanting the testicles of higher apes to man and have obtained results which are in every way analogous to those obtained in transplantation of human testicles.

Moreover, these transplants of the higher apes have been removed after several months and proved histologically to be in full activity and vascularized. This is the first time that successful transplantation from ape to man has been verified by histological proof.

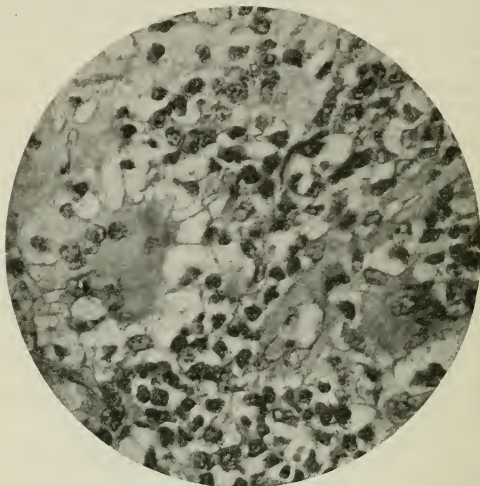


Fig. 2. Same as Fig. 1. Magnification 560 diameters. Observe what appear to be Leydig cells, giant cells and abundance of cell life in well nourished area.

The accompanying illustration is a reproduction of the histological appearance of a section from such a graft which was removed four months after implantation. It shows regression of the seminiferous tubules, proliferation of the interstitial elements of the testicle and vascularization of the graft.

I have done a great many transplantations from the higher apes to human subjects and in the cases where I have employed the improved technique almost invariably excellent results have been obtained.

The full details of my surgical technique and clinical findings will be published later in a more complete report.

SUMMARY

A new technique has been devised whereby it has proved possible to transplant testes from man to man or from higher ape to man and secure persistence of the graft with consequent clinical improvement of symptoms due to gonadal deficiency. Two photomicrographs are reproduced, showing persistence of graft.

BIBLIOGRAPHY

1. Brown-Séquard: *Compt. rend. Soc. de biol., Par.*, 1889, 415.
2. Voronoff: *Rev. de chir.*, 1919, 57, 697.
3. Lespinasse: *J. Am. M. Ass.*, 1913, 61, 1869.